The effect of gynecomastia on body image perception and gender roles in adolescents

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The aim of our study was to evaluate the effect of gynecomastia on body image perception and gender roles in adolescents. Forty-seven adolescents with gynecomastia and 63 healthy adolescents were enrolled in the study. The Body Image Perception Scale (BIPS) and the Bem Gender Role Inventory (BGRI) were administered to the study group after the first evaluation and also one month later. The percentage of adolescents with a BIPS score lower than the median was higher in the study group than in the control group, although there was no significant difference. Additionally, considering the single item "my breasts," it was observed that body image perception disturbance existed mostly, if not entirely, in relation to this body part. After detailed information regarding gynecomastia was given during the first clinical session, the BIPS score improved at the one-month follow-up, emphasizing the importance of informing and educating patients regarding this condition. BGRI results showed that gender roles of patients with gynecomastia are not influenced in the feminine direction.

Key words: gynecomastia, body image perception, gender roles.

Adolescence is the transition period from childhood to adulthood, during which accelerated physical growth, sexual development and psychosocial maturation occur. Having a positive body image perception is not only one of the most important aspects of this period; it also initiates the establishment of self-respect and the development of identity.[1] Adolescents find real or imagined defects, deficits or disfigurements in themselves by comparing their physical features with those of their peers or those that they aspire to have; this situation may result in embarrassment and discomfort. Gynecomastia is one cause of discomfort in male adolescents during this period.[1,2]

Pubertal gynecomastia is defined as benign breast enlargement that begins during male puberty and is not associated with underlying pathogenic causes such as endocrinopathy or pharmaceutical exposure.[1] Its prevalence ranges between 3.9% and 64.6%.[3-5] The cause of this large variation lies in the fact that there is no uniform glandular disc diameter criteria to define gynecomastia. Investigators have used measurements varying from 0.5 cm to 2 cm palpable disc diameter size to make the diagnosis.[3] Typically, gynecomastia appears 6 months after the onset of male secondary sexual characteristics, with a peak incidence at Tanner stages 3 and 4. The enlargement of the glandular breast tissue regresses in 1 to 2 years and rarely persists after 17 years of age.[1]

Puberty is a sensitive period, during which many changes in the physical appearance of the adolescent take place. Body image perception also develops during this period, so adolescents are especially sensitive about the thoughts and reactions of other people. Since breast tissue development is a sign of sexual differentiation, breast tissue enlargement is accepted as a sign of puberty in females, whereas in males it is regarded as a defect.[3]

Taking into consideration the fact that gender roles are acquired in the pubertal period, an

investigation into the effects of a common problem like gynecomastia on body image and gender roles would be helpful in determining the appropriate content of information and education that can be offered to these adolescents. Although the psychological issues in female populations undergoing mastectomy or breast reconstruction are well-discussed in the literature, gynecomastia and its effects on the male population have been overlooked.[6]

The aim of this study is to evaluate the effect of gynecomastia on body image perception and gender roles in male adolescents.

Materials and Methods

Study Design

The study group comprised 47 male adolescents between the ages of 11 and 18 years (mean 13.98 ± 1.53) who were referred to the Hacettepe University Ihsan Doğramacı Children's Hospital Division of Adolescent Medicine between February 2012 and January 2013 with complaints such as swelling, firmness, pain or change in the shape of the breasts along with emotional discomfort or suspicion of breast cancer; or with no complaints, but with gynecomastia having been incidentally observed during routine physical examination. A disk diameter of 0.5 cm or more was considered gynecomastia; both left and right breasts were examined, disc diameter was measured in two dimensions, long diameters were taken into consideration and the duration of gynecomastia was noted. Sixty-three healthy male adolescents in the same age range with no history of gynecomastia comprised the control group (mean 14.06 ± 2.29 years).

In both groups, weight, height, height age, body mass index (BMI), ideal weight percentage and Tanner stage of sexual development were noted, with pubic hair stage taken into account. Weight and height were assessed according to standard anthropometric measurements. BMI percentile values were evaluated according to age, and three subgroups were formed on the basis of BMI percentile: underweight, normal weight and overweight or obese. Family history of gynecomastia was noted. We administered the Body Image Perception Scale (BIPS) and the Bem Gender Role Inventory (BGRI) to the study group after the first evaluation (BIPS1, BGRI1), and then one month later at the second evaluation (BIPS2, BGRI2). Only after the questionnaires were completed at the first evaluation was detailed information given to the study group concerning gynecomastia. Twenty-six of the 47 patients returned for the second evaluation, and comparisons between the first and second evaluations were made for these 26 patients. The two questionnaires were administered to the control group only once.

The study was approved by Research Ethics Committee of Ankara University. Written informed consent was obtained from the adolescents and their parents before participation.

Body Image Perception Scale and Bem Gender Roles Inventory

The Body Image Perception Scale developed by Secord and Jourand in 1953, as adapted for the Turkish population by Hovardaoglu[7] in 1989, was used for the assessment of body image perception. The BIPS includes 40 items intended to evaluate individuals' contentment with certain parts of the body such as the arms, legs and face, as well as some functions of the body such as sexual activity. All of the items are graded according to a 5-point Likert scale (1: do not like, 5: like very much), with a minimum 40 and maximum 200 total score. We determined a median score combining both the study and the control groups' BIPS scores and then calculated the number and percentage of participants in each group with BIPS scores below the median. We also calculated the mean score for both groups.

The Bem Gender Role Inventory, another self-assessment-type scale, which was developed by Sandra L Bem in 1974, was used in our study for the evaluation of the effect of gynecomastia on sexual identity.[8] The scale was adapted for the Turkish population in 1987 by Kavuncu[9], and has been shown to have acceptable levels of concurrent validity and reliability[10,11]. BGRI is a measure of masculinity-femininity and gender role. The test lists 60 different personality traits, concerning which participants rate themselves on a 7-point Likert scale. Traits are evenly divided, with 20 "masculine," 20 "feminine" and 20 "filler" traits considered to be gender neutral. As in other studies in which this inventory has been used, we used only the 40 masculine and feminine items in our investigation, omitting the 20 gender-

neutral items. Participants were asked to rate themselves on each trait using the Likert scale, with 1 indicating "never" or "almost never" true, and 7 indicating "always" or "almost always" true. For scoring, a split median technique was used. The BGRI offers four possible resulting categorizations: masculine, feminine, androgynous and undifferentiated. Sex-typed scores, masculine and feminine, are the result of scoring above the median in one gender and below the median in the other. Androgynous is the result of scoring above the median, and undifferentiated, the result of scoring below the median, in both the masculine and feminine categories.

Statistical Analysis

Statistical analysis was performed using SPSS 21.0. Data with a normal distribution were expressed as mean ± SD; those without a normal distribution, as a median (min-max). The correlations between quality variables were analyzed with a χ^2 test. An independent samples *t*-test was used for comparison of data with a normal distribution between the two groups. The Mann-Whitney U test was used for data without a normal distribution. Since there were more than two groups for BGRI results, the difference between the groups was analyzed using the Kruskal–Wallis method. The correlation between two numerical variables for data with a normal distribution was analyzed using the Pearson correlation coefficient; that for data without a normal distribution was analyzed using the Spearman correlation coefficient. A P value <0.05 was considered significant.

Results

Forty-seven adolescents with gynecomastia and 63 healthy adolescents were included in the study. There was no statistically significant difference between the study and control groups in terms of the clinical and demographic characteristics displayed in Table I, except for family history of gynecomastia. Gynecomastia was bilateral in 74.6% (25/47) of patients in the study group; the left and right disc long diameters were 2.30 ± 1.33 cm and 2.34 ± 1.30 cm, respectively.

There was no statistically significant difference between BIPS scores in the study and control groups (p >0.05). The mean score of the study

Table I. Clinical and Demographic Characteristics of the Study and Control Groups

Characteristic	Study group (n=47)	Control group (n=63)
Age, years	13.98±1.53	14.06±2.29
Height age, years	14.58±1.90	14.95±2.12
Weight, kg	62.05±14.06	60.61±16.74
Height, cm	164.52±9.71	165.57±10.40
BMI, kg/m²	22.68±3.86	21.83±4.89
BMI for age percentile, n (%)		
Underweight	1 (2.10)	11 (17.5)
Normal weight	31 (66.0)	37 (58.7)
Overweight/obese	15 (31.9)	15 (23.8)
Tanner stage, n (%)		
1	0 (0)	4 (6.3)
2	11 (23.5)	15 (23.9)
3	18 (38.3)	12 (19.0)
4	13 (27.6)	20 (31.8)
5	5 (10.6)	12 (19.0)
Lipomastia, n (%)	8 (17.0)	7 (11.1)
Family history of gynecomastia*, n (%)	12 (25.5)	0 (0.0)

Data are presented as mean±SD unless otherwise indicated. *p <0.05, BMI: body mass index.

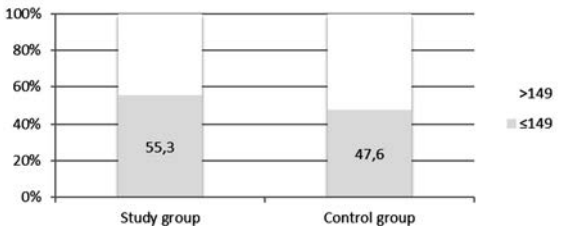

Fig. 1. Distribution of patients in the study and control groups with BIPS1 scores below the median.

group was 152.34 ± 23.34 (min: 102–max: 196), and that of the control group, 147.33 ± 23.37 (min: 89–max: 198). Looking at the longitudinal evaluation of the 26 patients in the study group, the mean score was 151.88 ± 24.43 in the first evaluation and 158.54 ± 27.11 a month later. The mean score increased approximately 7 points, a statistically significant difference ($p < 0.005$).

The median BIPS1 score for all participants in both the study and control groups was 149. Although the percentage of adolescents with a BIPS1 score lower than the median was higher in the study group than in the control group, there was no significant difference between the groups. The percentage of participants with a BIPS1 score below the median score ($p > 0.05$) is shown in Fig. 1.

Twenty-six patients in the study group and 30 patients in the control group had scores below the median. When the BIPS items were evaluated separately, we observed that 22 of 26 patients in the study group (84.6%) and 12 of 30 patients in the control group (40.0%) gave responses worth 1 (I do not like) or 2 (I do not much like) point/s for the item "my breasts." Detailed data for this item are shown in Table II.

The distribution of patients according to the duration of gynecomastia is given in Table III. Data concerning the duration of gynecomastia was available for only 33 patients, since 14 patients could not remember when the gynecomastia disc appeared. Among these 33 patients, 16 had BIPS1 scores below the median. We could not determine a relation between the groups since the number of patients in the subgroups was not sufficient for statistical analysis.

We found no significant difference between the number of patients below the BIPS1 median score for the three subgroups categorized according to BMI in both the study and control groups, but the number of patients with a score below the median was lower in the normal weight subgroup. Data concerning the BIPS median scores for the BMI subgroups are shown in Table IV. We also did not find a correlation between disc size and BIPS score ($p > 0.05$).

The BGRI subgroup distribution of patients in the study and control groups is displayed in Table V, and in the longitudinal evaluation of the study group in Table VI.

Table II. Distribution of Patients in the Study and Control Groups for the Item "My Breasts" in BIPS1

Points given for "my breasts" item in BIPS1		1	2	3	4	5	Total
Study group, n	≤149	12	10	3	1	0	26
	>149	5	4	4	4	4	21
Control group, n	≤149	5	7	9	9	0	30
	>149	2	3	1	11	16	33

BIPS: Body Image Perception Scale

Table III. Distribution of Patients by Duration of Gynecomastia and BIPS1 Median Score

Duration of gynecomastia	Patients (n)	n (%) of patients with BIPS1 score below the median
<3 months	8	1 (12.5)
3-6 months	8	6 (75.0)
6 months-1 year	9	4 (44.4)
1-2 years	5	3 (60.0)
>2 years	3	2 (66.6)

Table IV. BIPS Scores in BMI Subgroups

	Underweight		Normal weight		Overweight or obese	
	Mean±ss	n (%) below median	Mean±ss	n (%) below median	Mean±ss	n (%) below median
Study group	139.00	1 (4.0)	155.16± 25.07	15 (57.6)	147.40± 19.68	10 (38.4)
Control group	137.36± 26.46	7 (23.3)	150.57± 26.51	16 (53.4)	146.67± 30.05	7 (23.3)

Table V. Distribution of Patients in the Study and Control Groups According to BGRI Subgroups

	Study Group BGRI1, n (%)	Control Group BGRI1, n (%)
Feminine	7 (14.9)	10 (15.9)
Masculine	7 (14.9)	9 (14.3)
Androgynous	27 (57.4)	28 (44.4)
Undifferentiated	6 (12.8)	16 (25.4)

We found no significant relationship between the number of patients below the BIPS1 median score and BGRI subgroup (Table VII).

Discussion

Although there exists a vast literature regarding the diagnosis, classification and treatment of gynecomastia, there are few articles about the psychological effects of gynecomastia. Psychological issues related to mastectomy and mammarian reconstruction in the female population have been comprehensively studied, but similar topics concerning males have been overlooked. Although severe medical complications are rare and the disorder is of a transient nature, gynecomastia can still cause serious and permanent psychological effects because of its occurrence during the critical period of adolescence, when body image perception is formed, and self-confidence and sexual identity are developed. We aimed to evaluate the effect of gynecomastia on body image perception and gender roles in the adolescent age group.

Adolescents with gynecomastia may have physical complaints such as pain, tenderness or swelling in the breasts, or emotional disturbances due to a change in the shape of their bodies. In addition, they may experience anxiety about having breast cancer. Hemanz et al.[12] found emotional discomfort in 26% of a study group composed of 46 patients with gynecomastia. Kılıç et al.[13] determined that 24.6% of the patients admitted to their clinic with gynecomastia had emotional disturbances. Patients with gynecomastia tend to complain about swelling and tenderness in the early period, but as time passes and the disc becomes more prominent, emotional discomfort takes over.[13] In our study, the number of patients in the subgroups categorized according to the duration of gynecomastia was not sufficient for statistical analysis, but the number of patients with scores below the median was lowest when the duration was shorter than 3 months.

Early adolescence is the period in which adolescents are most concerned with their bodies, and their feelings and perceptions in this respect are mostly negative. If they cannot overcome such feelings, anxiety and depression may develop[13]. To assess any differences in the body image perception of adolescents with gynecomastia, we administered the BIPS, in which higher scores indicated a more positive body image perception. The median BIPS score of the study and control groups was 149. There was no significant difference between the study and control groups in terms of mean score or the number of patients below the median score, showing that body image perception of adolescents with gynecomastia was not affected. A study by Kinsella et

Table VI. Distribution of Patients in the Longitudinal Evaluation of the Study Group (n=26) According to BGRI Subgroups

	BGRI1, n (%)	BGRI2, n (%)
Feminine	5 (19.4)	4 (15.4)
Masculine	4 (15.4)	6 (23.1)
Androgynous	15(57.6)	13 (50.0)
Undifferentiated	2 (7.6)	3 (11.5)

Table VII. BIPS Scores in BGRI Subgroups

BGRI	Study group BIPS			Control group BIPS		
	mean±SD	n (%) below median	min.-max	mean±SD	n (%) below median	min.-max.
Feminine	142.71 ±24.04	4 (15.4)	112-181	148.40 ±23.70	5 (16.7)	92-188
Masculine	148.86 ±25.64	4 (15.4)	124-185	156.22 ±21.6	2 (6.7)	122-182
Androgynous	157.59 ±21.91	14 (53.8)	123-196	158.14 ±25.69	9 (30.0)	98-198
Undifferentiated	144.00 ±25.61	4 (15.4)	102-180	122.75 ±20.27	14 (46.6)	89-177

al.[6] evaluating the psychological burden of idiopathic pubertal gynecomastia stated that the occurrence of gynecomastia, a gender incongruent state, during a critical period in which body image and sexual identity form may affect normal psychological development. Twenty-four patients aged between 12 and 18 years were included in the study and compared with the general population with regard to anxiety, depression and social phobias. All patients received a diagnosis according to the Diagnostic and Statistical Manual of Mental Disorders-IV[14]. Although, we did not find in our study a significant difference between the study and control groups in terms of the number of patients with BIPS scores below the median, in the longitudinal evaluation of the study group the BIPS2 score was significantly different than the BIPS1 score, showing the positive effect of the information about the condition provided during the first session. Although there was no apparent difference between the median total BIPS scores of the two groups, when looking at the single item "my breasts," we can say that any body image perception disturbance there was existed mostly if not entirely with regard to this body part. Kinsella et al.[6] determined that patients with gynecomastia display germ phobias, suicidal despair, school disruptiveness, bulimia/anorexia, depression and social withdrawal. In the course of our study, a 12-year-old patient, who had been started on tamoxifen due to enlarged breast tissue, had also expressed disturbance about his breasts and anxiety because he was teased by his peers. Twelve days after the first session, he was seen in our hospital's emergency department due to an overdose of tamoxifen, taken because his friends made fun of him concerning his large breasts. Fortunately, we did not observe any side effects. We offered him information and consultation, and followed him more closely to provide psychosocial support. His BIPS score was 150, above the median, but his attitude and reactions in this instance showed us that the BIPS did not fully indicate the level of disturbance. For this reason, the clinician should evaluate the level of disturbance and psychological stress of the patient and give detailed information and support, which can be more important than medication in most cases.

Schonfeld[15] published the most significant

study of the psychiatric effects of pubertal gynecomastia in 1961. In this study, thirty-eight patients with gynecomastia were evaluated; general withdrawal from activities and a tendency toward isolation, with specific avoidance of any activity requiring exposure of the body, were the common patterns of behavior. As a consequence, psychotherapy was offered to patients with gynecomastia for the first time.[15] Our clinical observations were similar, with our patients abstaining from sports activities such as swimming, preferring larger clothing and urgently requesting a solution before the summer holidays began.

A study of cosmetic surgery in adolescents by Larson et al.[16] showed that 18,000 surgeries were performed to correct gynecomastia in 2010, and 2000 patients (11.1%) were less than 18 years old. They pointed to an elevation in self-esteem after the surgical correction.

We found no significant difference in the number of patients with BIPS scores below the median between the three subgroups categorized according to BMI in the study and control groups but the mean scores were higher in the normal weight subgroup. We also did not find a correlation between disc size and BIPS score.

The study by Schonfeld[15] also investigated psychosocial setting and sexual behavior patterns using psychodiagnostic tests administered to the patients; 68% had anxiety concerning homosexuality and femininity. Although gynecomastia did not give rise to specific personality responses, it did create anxiety in the adolescents regarding their masculine adequacy. Adolescents may react to this situation in different ways, with some accepting "feminine" roles, while others strive to prove their adequacy as males, showing assertive and aggressive behavior, and a few may accept homosexuality[15,17]. We evaluated the effect of gynecomastia on gender roles and did not find any difference between the study and control groups on the basis of BGRI results. Most of the adolescents in both the study and control groups defined themselves as androgynous. We also found no significant relation between the BGRI subgroups and BIPS scores.

With reference to this data, we may say that gender roles are not influenced in the feminine direction in adolescents with gynecomastia.

Conclusions

Body image perception is disturbed in adolescents with gynecomastia mostly if not entirely with regard to one body part, the breasts. Breast development, a normal finding of pubertal development in girls, does not incline adolescent boys in the feminine direction. Clinical sessions to detect emotional discomfort in the adolescent and provide him with information concerning gynecomastia should be conducted by the clinician. Providing information and education is as important as medical therapy.

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